METHOD OF PRODUCING LITHIUM ION CATHODE MATERIALS

ABSTRACT

A method of producing $Li_y[Ni_xCo_{1-2x}Mn_x]O_2$ wherein $0.025 \leq x \leq 0.5$ and $0.9 \leq y \leq 1.3$. The method includes mixing $[Ni_xCo_{1-2x}Mn_x]OH_2$ with LiOH or Li_2CO_3 and one or both of alkali metal fluorides and boron compounds, preferably one or both of LiF and B_2O_3. The mixture is heated sufficiently to obtain a composition of $Li_y[Ni_xCo_{1-2x}Mn_x]O_2$ sufficiently dense for use in a lithium-ion battery cathode. Compositions so densified exhibit a minimum reversible volumetric energy characterized by the formula [1833 - 333x] measured in Wh/L.